

Intermediate Mass Higgs 160 - 180 GeV

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- $e^+e^- \rightarrow ZH$ $M_{\text{Higgs}} \sim 160 - 180 \text{ GeV}/c^2$
 - \Rightarrow Higgs $\rightarrow WW$ dominates
 - \Rightarrow bb and ZZ about same order (a few percent)
 - \Rightarrow Above 200, $ZZ \sim 10\%$
- WANT TO MEASURE:
 - \Rightarrow $\text{BF}(H \rightarrow WW)$, $\text{BF}(H \rightarrow ZZ)$, $\text{BF}(H \rightarrow bb)$
 - \Rightarrow $\Gamma(H \rightarrow WW)$, $\Gamma(H \rightarrow ZZ)$, $\Gamma(H \rightarrow bb)$
 - \gg To get couplings
 - \gg Requires Γ_{TOT} !

OR

- $\Rightarrow \Gamma(H \rightarrow WW)/\Gamma(H \rightarrow ZZ)$
 - \gg Which doesn't require Γ_{TOT} , gives ratio of couplings
- Key piece is $\sigma(e^+e^- \rightarrow ZH)$

Progress?



- Very little
- Need standards on:
 - ⇒ How to pick jets
 - » For use in W, Z, b identification
 - » Jet-Jet Mass distributions
 - ⇒ W identification
 - » Lepton + Missing Energy
 - » Jet-Jet Mass
 - ⇒ Z identification
 - » Dilepton mass
 - » Jet-Jet Mass
- SIMDET + Fortran?
- JAS?
- 4 vectors + smearing?
- Background generation/simulation

Plan for this group



- 160 GeV Higgs at $\sqrt{s} = 500$ GeV
- $\sigma(\text{ZH})$ precision
- $\text{BF}(\text{H} \rightarrow \text{WW})$ precision
- Time scale?
 - ⇒ September? Earlier will need more contributions
- Other masses, \sqrt{s} to follow